



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/779,894	02/17/2004	Wenbin Jiang	78414 (29-39 US)	9641
29370	7590	12/30/2005	EXAMINER	
ROBERT A. PARSONS 4000 N. CENTRAL AVENUE, SUITE 1220 PHOENIX, AZ 85012			NGUYEN, TUAN N	
			ART UNIT	PAPER NUMBER
			2828	

DATE MAILED: 12/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/779,894

Applicant(s)

JIANG ET AL.

Examiner

Tuan N. Nguyen

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02/17/2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8 and 16-18 is/are allowed.
- 6) ☒ Claim(s) 1,2,5-7,9, 10, 14, 15 is/are rejected.
- 7) ☒ Claim(s) 3,4 and 11-13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 July 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### **Drawings**

1. New corrected drawings are required in this application because it is not acceptable to the draft person. The corrected drawings are required in reply to the Office action.

### **Claim Rejections - 35 USC § 102**

2. The following is a quotation of 35 U.S.C. 102(b) which forms the basis for all obviousness rejections set forth in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 9, 10, 14 are rejected under 35 U.S.C. 102(b) as being unpatentable Jayaraman et al. (US 6372533).

With respect to claims 1, 9, 14 Jayaraman et al. '533 shows and discloses a vertical cavity surface emitting laser comprising: a lower distributed Bragg reflector; an active region positioned on the lower distributed Bragg reflector; an upper distributed Bragg reflector positioned on the active region (Col 4: 10-55 top/bottom mirrors and active region 22, 26, 24) (Fig 3: 50-52 epitaxially growing Bottom Active and Top mirrors) (ABSTRACT); a cylindrical volume removed from the upper distributed Bragg reflector defining a mesa with a substantially vertical side wall concentrically surrounded by the cylindrical volume (Fig <sup>2</sup>~~4~~: 16, 18, 42 cylindrical volume removed from upper DBR)(Fig 3: 58, 66, 68, 70 forming mesa and patterning one or more holes through top and bottom layers) an isolation trench formed in a lower surface of the cylindrical volume concentric with the mesa (Fig 3: 68 etching holes through bottom layer)(Col 6: 20-35 shape and placement of holes can be controlled to a specific

Art Unit: 2828

shape); an implant region including a portion of the side wall of the mesa and a portion of the upper distributed Bragg reflector below the lower surface of the cylindrical volume; a planarizing material filling the cylindrical volume(Fig 3: 70, 72, 74 creating oxide aperture and deposit coating); and n and p electrical contacts coupled to opposite sides of the active region for supplying operating current thereto (Fig 3: 76 n-p contact) (Fig 2: 10, 14 n-p contact opposite sides left/right of the active region)(Col 4-5). Since claim 9, 14 recites the same or identical elements/limitations it is inherent to use patents '533 to recite the method of manufacturing optical pickup apparatus, product by process.

With respect to claims 2, 10 Jayaraman et al. '533 shows the lower surface of the cylindrical volume forms an angle greater than ninety degrees with the side wall of the mesa (Fig 2: 28 the lower surface of the volume has an angle greater than ninety degrees with side wall).

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

Art Unit: 2828

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or non-obviousness.
5. Claims 5-7, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jayaraman et al. (US 6372533).

With respect to claims 5, 15 Jayaraman et al. '533 discloses the above; the claims further require that the planarizing material includes a low-k dielectric material or polyimide material. It has been held that where the general conditions of a claim are disclosed in the prior art, selecting a known material involves only routine skill in the art, in this case is the dielectric material or polyimide material does not exceed a matter of design.

With respect to claims 6, 7 the claims further require the implant region include some cylindrical volume surface includes proton implants. It is inherently obvious that the implant region have some cylindrical volume surface (Fig 2: 16 cylindrical volume surface), and Jayaraman et al. '533 further discloses (Fig 3: 60-76 the etching and depositing AlGaAs for oxidation layer). It has been held that where the general conditions of a claim are disclosed in the prior art, having proton implants without gathering prior art references does not exceed a matter of design and is within one skill in the art.

***Allowable Subject Matter***

Art Unit: 2828

6. Claims 3, 11 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The references of the record fail to teach or suggest:

***Claim 3:***

wherein the lower surface of the cylindrical volume is formed so that more mirror pairs of the upper distributed Bragg reflector remain adjacent the mesa and less mirror pairs remain as the lateral distance from the mesa increases.

***Claim 11:***

wherein the step of etching the cylindrical volume so that the lower surface of the cylindrical volume forms an angle greater than ninety degrees with the side wall of the mesa includes etching the cylindrical volume so that more mirror pairs of the upper distributed Bragg reflector remain adjacent the mesa and less mirror pairs remain as the lateral distance from the mesa increases.

***Communication Information***

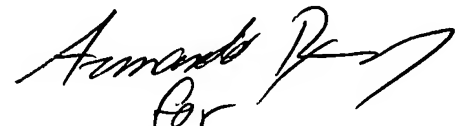
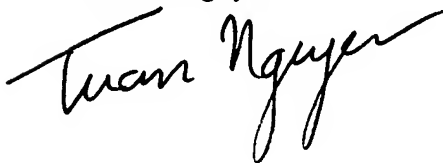
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan N Nguyen whose telephone number is (571) 272-1948. The examiner can normally be reached on M-F: 7:30 - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harvey Minsun can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2828

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tuan N. Nguyen



for  
MinSun Harvey  
Supervisor  
Art Unit 2828